

For the down-going conveyor, the back tilting of the load platform results in the lowest portion 68 of the load platform being displaced well forward of the rear wheels 16. The forward offset of this low point enables it to be feasibly positioned at or slightly above the top surfaces 41, 42 of the conveyor housing. In the case of the down-going conveyor, since the track for the front wheel 17 is offset forwardly from the track for the rear wheels, the height of the front wheel track 23 and the associated retaining structure 52 is a limiting dimension, and any load item on a down-going cart must clear over the top of the retaining structure 52 which in effect then defines the approximate level of the top surfaces 41, 42 for the conveyor housings in the inclined portion of the conveyor.

It should be understood, of course, that the specific forms of the invention herein illustrated and described are intended to be representative only, as certain changes may be made therein without departing from the clear teachings of the disclosure. Accordingly, reference should be made to the following appended claims in determining the full scope of the invention.

We claim:

1. In a cart conveyor system of the type comprising an inclined conveyor mechanism including laterally spaced, opposed endless conveyor bands, and wheeled load carrying carts engageable by said conveyor bands and movable thereby from one end to another of said inclined conveyor mechanism, said cart having a frame with a predetermined centerline and having front and back ends, said cart being provided with spaced apart first wheels at one end and wheel means at the other end comprising one or more second wheels positioned closer to said centerline than said first wheels, and said conveyor mechanism having track means for the respective sets of first and second wheels at opposite ends of said cart whereby said cart is maintained in a substantially horizontal orientation while engaged by said conveyor mechanism, the improvement characterized by

- (a) said conveyor bands being engageable with said cart closely adjacent said first wheels for controlling the advance of said cart along said conveyor mechanism,
- (b) a retaining track extending lengthwise along said inclined conveyor mechanism, and
- (c) an anti-lift element extending between said cart and said retaining track adjacent the other end of said cart for retaining vertical spacing between said retaining track and said other end of said cart while said cart is being advanced along said conveyor mechanism.

2. A cart conveyor system according to claim 1, wherein said conveyor mechanism is inclined for transport of said cart from one level to a second level.

3. A cart conveyor system according to claim 2, wherein

- (a) said spaced apart first wheels are positioned at the back of said cart and said one or more second wheels are positioned at the front of said cart,
- (b) said first wheels are spaced apart farther than said one or more second wheels,
- (c) spaced apart abutment brackets are mounted on said cart immediately laterally adjacent to and laterally outside of said first wheels,
- (d) said conveyor bands are engageable with said abutment brackets, and
- (d) said anti-lift element extends between a front portion of said cart and said retaining track.

4. A cart conveyor system according to claim 3, wherein

- (a) said one or more second wheels comprises a pair of front wheels spaced apart a distance less than said first wheels,

- (b) said retaining track is located generally centrally between said front wheels, and

- (c) said anti-lift element extends downward from said frame, between said front wheels, to engage said retaining track.

5. A cart conveyor system according to claim 3, wherein

- (a) said one or more second wheels comprises a single front wheel centrally located between opposite sides of said cart,

- (b) a wheel mounting bracket extends from said cart for mounting said wheel,

- (c) said track means for said one or more second wheels includes a retaining track for receiving and vertically confining said single front wheel,

- (d) said anti-lift element comprises means projecting laterally from said wheel mounting bracket for cooperation with said retaining track to prevent vertical separation of said front wheel from said retaining track.

6. A cart conveyor system according to claim 3, wherein

- (a) said inclined conveyor mechanism is upwardly moving,

- (b) the track means for said second wheels are offset forwardly and downwardly with respect to the track means for said first wheels, and

- (c) said conveyor bands are engageable with said cart laterally adjacent said first wheels and at a level not substantially higher than said first wheels.

7. A cart conveyor system according to claim 3, wherein

- (a) said inclined conveyor mechanism is downwardly moving,

- (b) the guide track means for said second wheels are offset forwardly and upwardly with respect to the guide track means for said first wheels, and

- (c) said conveyor bands are engageable with said cart laterally adjacent said first wheels and at a level not substantially higher than said first wheels.

8. A cart conveyor system according to claim 3, wherein

- (a) said cart is provided with abutment elements laterally adjacent to outer sides of said first wheels,

- (b) said abutment elements being of generally horizontally oriented V-shaped configuration defining upper and lower abutment portions engageable by said conveyor bands,

- (c) said upper and lower abutment portions being oriented to be generally at right angles to the conveyor bands of upwardly and downwardly inclined conveyor mechanisms.

9. A cart conveyor system according to claim 2, wherein

- (a) said cart frame includes an open sided load-carrying section of generally J-shaped configuration having an upwardly and rearwardly inclined back section, an upwardly and forwardly inclined bottom section joined with said back section and disposed generally at right angles thereto, and a front section joined with said bottom section and extending upwardly therefrom,

- (b) the region of joining of said bottom and back sections comprising the lowest point of said load-carrying section relative to the wheels of said cart,

- (c) said conveyor having containment housings for said conveyor bands at each side substantially enclosing said conveyor bands,

- (d) said containment housings including inner side walls positioned laterally adjacent the spaced apart first wheels of said cart and providing lateral confinement thereof, and

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(e) said containment housings further including laterally outwardly extending upper walls positioned at or slightly below the level of said lowest point and providing a generally smooth, generally flat surface for the guidance and support of load items carried in said load-carrying frame and extending laterally outwardly therefrom.

10. A cart conveyor system according to claim 9, wherein

(a) said conveyor mechanism is upwardly inclined at a predetermined angle, and

(b) the bottom section of said load-carrying frame is disposed at an angle corresponding generally to the angle of upward incline of said conveyor mechanism.

11. A cart conveyor system according to claim 9, wherein

(a) said conveyor mechanism has an entry end and an exit end.

(b) a load limit frame is mounted directly in front of said entry end, and

(c) said load limit frame comprises a pair of spaced-apart, upwardly extending side elements spaced apart a distance substantially greater than the maximum lateral spacing between wheels of said cart and defining an opening for the widest permissible load for a cart to be carried on said conveyor system.

12. A cart conveyor system according to claim 11, wherein

(a) said load limit frame is positioned a sufficient distance in front of said conveyor mechanism that an overwide load is engaged by said frame before said cart is engaged by said conveyor bands.

13. A cart conveyor system according to claim 2, wherein

(a) said conveyor bands are provided with a plurality of closely spaced, laterally extending engagement lugs for engagement with said cart on opposite sides thereof to control advancement of said cart along said conveyor system.

(b) said cart is provided on opposite sides with abutment elements positioned to be contacted by said engagement lugs whereby movement of said cart is controlled by movement of said conveyor bands, and

(c) said abutment elements are formed with a first section aligned generally at right angles to an angle of incline of an upwardly moving conveyor and a second section aligned generally at right angles to an angle of incline of a downwardly moving conveyor.

14. A cart conveyor system according to claim 13, wherein

(a) said abutment elements are of a generally horizontally oriented V-shaped configuration, and

(b) the first and second sections of said abutment elements are first and second portions of said V-shaped elements.

15. A cart conveyor system according to claim 13, wherein

(a) said spaced apart first wheels of said cart are mounted thereto in a fixed orientation.

(b) fixed wheel support elements mount said spaced apart wheels to said cart, and

(c) said abutment elements are fixedly mounted on said wheel support elements.

16. In a cart conveyor system of the type comprising a conveyor mechanism inclined at an angle and including laterally spaced, opposed endless conveyor bands, and a wheeled load carrying cart engageable by said conveyor bands on opposite sides and movable thereby from one end to another of said inclined conveyor mechanism, said cart

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having a frame and having front and back ends and being provided with spaced apart first wheels at one end and one or more second wheels at the other end, and said conveyor mechanism having separate longitudinally extending, offset track means for the respective first and second wheels whereby said cart is maintained in a substantially horizontal orientation while engaged by said conveyor mechanism, the improvement characterized by

(a) said conveyor bands being engageable with said cart adjacent the first wheels thereof and at a level not substantially higher than said first wheels for controlling the advance of said cart along said conveyor mechanism.

(b) said cart having a load-carrying frame including bottom-forming frame elements inclined substantially at said angle when said first and second wheels are substantially horizontal,

(c) said load-carrying frame including front and back frame portions for confining load items and defining a low point of said load-carrying frame at a level not substantially above said wheels, and

(d) a containment housing covering at least top portions of said conveyor bands and extending laterally at a level not higher than said low point to accommodate and support load items projecting laterally from said load-carrying frame.

17. A cart conveyor system according to claim 16, wherein

(a) said conveyor mechanism includes a retaining track extending longitudinally between said conveyor bands

(b) retaining means interconnecting a front portion of said cart with said retaining track to prevent lifting of the front end of said cart while said cart is being advanced forwardly along said conveyor mechanism.

18. A cart conveyor system according to claim 17, wherein

(a) said second wheels comprise a pair of wheels spaced apart a distance less than said first wheels.

(b) said retaining means comprise a connecting element extending from a front portion of said cart into engagement said retaining track.

(c) said retaining track having flange means overlying portions of said connecting element.

19. A cart conveyor system according to claim 16, wherein

(a) the bottom elements of said load-carrying frame are inclined upwardly and forwardly substantially at the angle of inclination of an upwardly inclined conveyor mechanism.

20. A cart conveyor system according to claim 16, wherein

(a) said conveyor mechanism has an entry end and an exit end and includes a load size limiting frame at said entry end.

(b) said load size limiting frame accommodating the passage of a cart having a load with greater than said cart and extending over said support surfaces.

21. A cart conveyor system according to claim 16, wherein

(a) said cart includes conveyor engaging abutment elements at each side, laterally adjacent said first wheels.

(b) said abutment elements comprising first and second abutment portions.

(c) said first abutment portions being oriented to be substantially perpendicular to the conveyor bands of an

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upwardly inclined conveyor mechanism and said second abutment portions being oriented to be substantially perpendicular to the conveyor bands of a downwardly inclined conveyor.]

[22. A cart conveyor system according to claim 17, 5 wherein

(a) means are provided for braking at least one of said first or second wheels against rotation when said cart is unattended, and

(b) said track means for said braked wheels is formed of a series of free-rotating rollers arranged to form a substantially continuous moving surface to accommodate movement of said braked wheels.] 10

23. A cart conveyor system according to claims 22, wherein

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(a) said rollers are arranged in at least two side-by-side rows, and

(b) the rollers of one row are offset from rollers of an adjacent row in the direction of movement of said braked wheels.

24. A cart conveyor system according to claim 21, wherein

(a) rigid support elements extending downward from said cart frame along outer sides of said first wheels, and

(b) said abutment elements comprising rigid elements of generally V-shaped configuration defining said first and second abutment portions.

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25. In a cart conveyor system of the type comprising an inclined conveyor

2 mechanism including one or more endless conveyor bands, and wheeled load
3 carrying carts engageable by said one or more conveyor bands and movable
4 thereby from one end to another of said inclined conveyor mechanism, said cart
5 having a frame with a predetermined centerline and having front and back ends,
6 said cart being provided with spaced apart first wheels at one end and wheel means
7 at the other end comprising one or more second wheels positioned closer to said
8 centerline than said first wheels, and said conveyor mechanism having track means
9 for the respective sets of first and second wheels at opposite ends of said cart
10 whereby said cart is maintained in a substantially horizontal orientation while
11 engaged by said conveyor mechanism, the improvement characterized by
12 (a) said one or more conveyor bands being engageable with said for controlling
13 the advance of said cart along said conveyor mechanism,
14 (b) a retaining track extending lengthwise along said inclined conveyor
15 mechanism, and
16 (c) an anti-lift element extending between said cart and said retaining track
17 adjacent the other end of said cart for retaining vertical spacing between said
18 retaining track and said other end of said cart while said cart is being advanced
19 ~~along said conveyor mechanism.~~

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26. A cart conveyor system according to claim 25, wherein
2 (a) said spaced apart first wheels are positioned at the back of said cart and said
3 one or more second wheels are positioned at the front of said cart, and
4 (b) said anti-lift element extends between a front portion of said cart and said
5 retaining track.

